

CLAIMS

1. An absorption refrigerating machine comprising:
an evaporator;
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an absorber;
a condenser;
a high-temperature regenerator;
a low-temperature regenerator;
a low-temperature solution heat exchanger;
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a solution path through which an absorption solution flows;
a refrigerant path through which a refrigerant flows;
a first branch solution path and a second branch solution path configured to divide a dilute solution to be introduced from said absorber to said high-temperature regenerator;
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a first high-temperature solution heat exchanger and a second high-temperature solution heat exchanger operable to perform heat exchange between the dilute solution in said first branch solution path and a concentrated solution heated and concentrated in said high-temperature regenerator; and
a drain heat exchanger operable to perform heat exchange between the dilute solution in said second branch solution path and an exhaust heat source which has heated
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the dilute solution in said high-temperature regenerator,
wherein the dilute solution in said first branch solution path flows through said first high-temperature solution heat exchanger and said second high-temperature solution heat exchanger in this order, and
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the concentrated solution discharged from said high-temperature regenerator flows through said second high-temperature solution heat exchanger and said first high-temperature solution heat exchanger in this order.

2. The absorption refrigerating machine according to claim 1, wherein the dilute solution to be supplied to said high-temperature regenerator flows along an outer portion of a heat-transfer member of said second high-temperature solution heat exchanger.

5 3. The absorption refrigerating machine according to claim 1 or 2, wherein said second high-temperature solution heat exchanger is constructed integrally with said high-temperature regenerator.

4. An absorption refrigerating machine comprising:

10 an evaporator;

 an absorber;

 a condenser;

 a high-temperature regenerator;

 a low-temperature regenerator;

15 a low-temperature solution heat exchanger;

 a solution path through which an absorption solution flows;

 a refrigerant path through which a refrigerant flows;

20 a first branch solution path and a second branch solution path configured to divide a dilute solution to be introduced from said absorber to said high-temperature regenerator;

 a high-temperature solution heat exchanger operable to perform heat exchange between the dilute solution in said first branch solution path and a concentrated solution heated and concentrated in said high-temperature regenerator; and

25 a first drain heat exchanger and a second drain heat exchanger operable to perform heat exchange between the dilute solution in said second branch solution path and an exhaust heat source which has heated the dilute solution in said high-temperature regenerator,

 wherein the dilute solution in said second branch solution path flows through

5 said first drain heat exchanger and said second drain heat exchanger in this order, and
the exhaust heat source discharged from said high-temperature regenerator flows
through said second drain heat exchanger and said first drain heat exchanger in this order.

10 5. The absorption refrigerating machine according to claim 4, wherein the dilute
solution to be supplied to said high-temperature regenerator flows along an outer portion
of a heat-transfer member of said second drain heat exchanger.

15 6. The absorption refrigerating machine according to claim 4 or 5, wherein said
second drain heat exchanger is constructed integrally with said high-temperature
regenerator.

20 7. An absorption refrigerating machine comprising:
an evaporator;
an absorber;
a condenser;
a high-temperature regenerator;
a low-temperature regenerator;
a low-temperature solution heat exchanger;
a solution path through which an absorption solution flows;
a refrigerant path through which a refrigerant flows;
a first branch solution path and a second branch solution path configured to
divide a dilute solution to be introduced from said absorber to said high-temperature
regenerator;
25 a first high-temperature solution heat exchanger and a second high-temperature
solution heat exchanger operable to perform heat exchange between the dilute solution in
said first branch solution path and a concentrated solution heated and concentrated in said
high-temperature regenerator; and

a first drain heat exchanger and a second drain heat exchanger operable to perform heat exchange between the dilute solution in said second branch solution path and an exhaust heat source which has heated the dilute solution in said high-temperature regenerator,

5 wherein the dilute solution in said first branch solution path flows through said first high-temperature solution heat exchanger and said second high-temperature solution heat exchanger in this order,

10 the concentrated solution discharged from said high-temperature regenerator flows through said second high-temperature solution heat exchanger and said first high-temperature solution heat exchanger in this order,

 the dilute solution in said second branch solution path flows through said first drain heat exchanger and said second drain heat exchanger in this order, and

 the exhaust heat source discharged from said high-temperature regenerator flows through said second drain heat exchanger and said first drain heat exchanger in this order.

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8. The absorption refrigerating machine according to claim 7, wherein the dilute solution to be supplied to said high-temperature regenerator flows along at least one of an outer portion of a heat-transfer member of said second high-temperature solution heat exchanger and an outer portion of a heat-transfer member of said second drain heat exchanger.

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9. The absorption refrigerating machine according to claim 7 or 8, wherein at least one of said second high-temperature solution heat exchanger and said second drain heat exchanger is constructed integrally with said high-temperature regenerator.

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10. An absorption refrigerating machine comprising:

 an evaporator;

 an absorber;

- a condenser;
- a high-temperature regenerator;
- a low-temperature regenerator;
- a low-temperature solution heat exchanger;
- 5 a solution path through which an absorption solution flows;
- a refrigerant path through which a refrigerant flows;
- a first branch solution path and a second branch solution path configured to divide a dilute solution to be introduced from said absorber to said high-temperature regenerator;
- 10 a recovery heat exchanger disposed on a solution path through which the dilute solution is introduced from said absorber to said low-temperature regenerator, said recovery heat exchanger being operable to perform heat exchange between the dilute solution in said solution path and a concentrated solution heated and concentrated in said high-temperature regenerator;
- 15 a high-temperature solution heat exchanger operable to perform heat exchange between the dilute solution in said first branch solution path and the concentrated solution heated and concentrated in said high-temperature regenerator; and
- 20 a drain heat exchanger operable to perform heat exchange between the dilute solution in said second branch solution path and an exhaust heat source which has heated the dilute solution in said high-temperature regenerator.
- 25 11. The absorption refrigerating machine according to claim 10, wherein said recovery heat exchanger is disposed adjacent to a group of heat-transfer pipes of said low-temperature regenerator, and is disposed in a casing of said low-temperature regenerator.
12. The absorption refrigerating machine according to any one of claims 1 to 11, wherein a solution path, through which the dilute solution is discharged from said

absorber, extends through a heat-receiving side of said low-temperature solution heat exchanger to a branch point of said first branch solution path and said second branch solution path.

- 5 13. The absorption refrigerating machine according to any one of claims 1 to 11, wherein a solution path, which extends to said high-temperature regenerator, branches into said first branch solution path and said second branch solution path at a midpoint of a heat-receiving side of said low-temperature solution heat exchanger.
- 10 14. The absorption refrigerating machine according to any one of claims 1 to 13, wherein each of said evaporator and said absorber has a multistage structure which operates at different pressure stages.